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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,676	07/04/2003	Chin-Long Lin	68146241-005011	7315

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EXAMINER	
STIGLIC, RYAN M	
ART UNIT	**PAPER NUMBER**
2112	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/614,676	LIN ET AL.	
	Examiner	Art Unit	
	Ryan M. Stiglic	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/4/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-15 are pending and have been examined.

2. Claims 1-15 are rejected.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 11-13 and 15 rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (US006092137A).

For claim 11 Huang discloses:

A method for a system having a plurality of functional devices accessing a memory bus, the method comprising the steps of:

(a) providing a plurality of request agents respectively corresponding to said functional devices (Fig. 2, CS#1 – CS#n);

(b) storing access priority grades for said request agents (Fig. 2, 21-23; col. 4, ll. 59-67);

(c) comparing said access priority grades (Fig. 3, S36; col. 5, ll. 26-60);

(d) electing a request agent out of said request agents according to said compared access priority grades (col. 5, ll. 28-30); and

(e) allowing access to said memory bus for one cycle of period of time by one of said functional devices corresponding to said elected request agent to said memory bus (Figure 3 shows that the process of requesting, arbitrating, and granting is repetitive [see the arrow leaving block S40]. Therefore the winning competing source is granted access to the bus for one cycle of period of time. Col. 5, ll. 28-30).

For claim 12 Huang discloses:

The method of claim 11 further comprising the step of repeating steps (c), (d) and (e) for a plurality of cycles of period of time (Figure 3 shows that the process of requesting, arbitrating, and granting is repetitive [see the arrow leaving block S40]. Therefore the winning competing source is granted access to the bus for one cycle of period of time. Col. 5, ll. 28-30; col. 5, ll. 35-36).

For claim 13 Huang discloses:

The method of claim 11 wherein said access priority grades are counter values ranging from largest to smallest and said elected request agent is one that includes the smallest counter value (col. 5, ll. 20-36; Fig. 3 and 5; col. 5, line 63 – col. 6, line 16.).

For claim 15 Huang discloses:

The method of claim 11 wherein said functional devices are selected from the group consisting of memory controllers, image processors, motion estimation processors, host and peripheral

interfaces (The invention of Huang teaches implementing the invention with respect to peripheral interfaces (Media Access Controllers), col. 7, ll. 29-51; Fig. 8).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US006092137A).

For claims 1 and 6 Huang teaches:

A system comprising: a plurality of functional devices accessing a memory (data) bus wherein said memory (data) bus allows access by one of said functional devices for one cycle of period of time;

- a plurality of request agents corresponding to said functional devices (Fig. 2, CS#1 – CS#n);
- a control register respectively storing access priority grades for said request agents (While Huang does not expressly state the presence of said control register, they do teach an initial priority grade is assigned to each device (col. 5, ll. 22-24) during an initialization step performed by the arbiter (col. 6, ll. 1-2). Upon being granted use of the

bus, a requesting device's priority grade is reset to its initial value (col. 5, ll. 30-33; col. 6, ll. 8-11). Furthermore if two competing sources share the same priority grade, the arbiter selects the competing source with the largest initial priority grade (col. 6, ll. 13-16). Therefore the arbiter [Fig. 2, 20] obviously contains some "control register" means for retrieving the initial priority grade of a device and comparing initial priority grades in the event of equivalent priority grades during arbitration.);

- a plurality of counter timers respectively loading said access priority grades (Fig. 2, 21-23; col. 4, ll. 59-67); and
- a bus elector coupled with said counter timers wherein said bus elector respectively compares said loaded access priority grades and elects one out of said request agents according to said compared access priority grades (Fig. 2, 20; col. 5, line 63 – col. 6, line 16);
- wherein said memory bus allows access by one of said functional devices corresponding to said elected request agent for one cycle of period of time (Figure 3 shows that the process of requesting, arbitrating, and granting is repetitive [see the arrow leaving block S40]. Therefore the winning competing source is granted access to the bus for one cycle of period of time. Col. 5, ll. 28-30).

For claims 2 and 7 Huang teaches:

The system of claim 1 wherein said functional devices are selected from the group consisting of memory controllers, image processors, motion estimation processors, host and peripheral

interfaces (The invention of Huang teaches implementing the invention with respect to peripheral interfaces (Media Access Controllers), col. 7, ll. 29-51; Fig. 8).

For claims 3 and 8 Huang teaches:

The system of claim 1 wherein said access priority grades are counter values ranging from largest to smallest and said elected request agent is one that includes the smallest counter value (col. 5, ll. 20-36; Fig. 3 and 5; col. 5, line 63 – col. 6, line 16.).

For claims 4 and 9 Huang teaches:

The system of claim 1 wherein said access priority grades are counter values ranging from largest to smallest and said elected request agent is one that includes the largest counter value (The Examiner has previously shown that the invention of Huang selects a competing source on the basis of the smallest priority grade. Subtracting one from the current priority grade value of all denied sources dynamically alters the priority grade. OFFICIAL NOTICE is taken that it would have been obvious to one of ordinary skill in the pertinent art to add one to the initial priority grade values instead of subtracting one. The addition of one to all denied sources and the selection of the largest priority grade is functionally equivalent to subtracting one from all denied sources and selecting the competing source with the smallest priority grade. The Examiner respectfully submits that there is no significant novelty in implementing an addition/selecting largest priority scheme over a subtraction/selecting smallest priority scheme since the two schemes are functionally equivalent.).

For claims 5 and 10 Huang teaches:

The system of claim 1 further comprising a control unit for connected to said request agents for respectively receiving corresponding requests for access to said memory bus (Fig. 1, "Arbiter" 6; all of Fig. 2; col. 5, line 63 – col. 6, line 16; col. 5, ll. 20-36).

For claim 14 Huang teaches:

The method of claim 11 wherein said access priority grades are counter values ranging from largest to smallest and said elected request agent is one that includes the largest counter value (The Examiner has previously shown that the invention of Huang selects a competing source on the basis of the smallest priority grade. The priority grade is dynamically altered by subtracting one from the current priority grade value of all denied sources. OFFICIAL NOTICE is taken that it would have been obvious to one of ordinary skill in the pertinent art to add one to the initial priority grade values instead of subtracting one. The addition of one to all denied sources and the selection of the largest priority grade is functionally equivalent to subtracting one from all denied sources and selecting the competing source with the smallest priority grade. The Examiner respectfully submits that there is no significant novelty in implementing an addition/selecting largest priority scheme over a subtraction/selecting smallest priority scheme since the two schemes are functionally equivalent.).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Dutton disclose a bus arbiter including a plurality of programmable registers that receive "configuration data" to provide priority grades for requesting devices.
- Arimilli et al. disclose a control register [Fig. 2, 42] and a separate priority register [Fig. 2, 52] for use in a resource arbitration system.
- Logsdon discloses a bus access prioritization scheme utilizing a priority override register (Fig. 3, 100).
- Hewitt et al. discloses a plurality of programmable priority registers [Fig. 2, 212] for use with an arbitration system.
- Yakashiro discloses a plurality of counters for use with a prioritization bus request arbitration system.
- Schaffer et al. discloses a master priority register [Fig. 2, 220] and a dynamic priority decoder for use in a bus access arbitration system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan M. Stiglic whose telephone number is 571.272.3641. The examiner can normally be reached on Monday - Friday (6:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571.272.3632. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RMS

PAUL R. MYERS
PRIMARY EXAMINER